

Z88 EPROM

November 1991

Vol.5 No.9

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Club Addresses

All articles for **Z88 EPROM** and any membership matters (except Software Library) should be sent to:

**ROY WOODWARD
Z88 USERS' CLUB
68 WELLINGTON STREET
LONG EATON
NOTTINGHAM
NG10 4NG**

All requests for software from the Club Software Library, (but not special offers), items for inclusion in the Library, and EPROMs for erasure should be sent to:

**IAN BRABY
THE SOFTWARE LIBRARY
Z88 USERS' CLUB
3/8 JENNER ROAD
GUILDFORD
SURREY
GU1 3PL**

Please note that the **Library** address is the one to use when sending for a list of Library programs - this list is **not** available from the main Club address. Be sure to enclose £1 plus a SAE for the list. Also note that this list now includes the CLI Library List.

CLIs for inclusion in the Software Library should be sent to:

**MICHAEL HEY
18 WOODSIDE ROAD
SANDIACRE
NOTTINGHAM
NG10 5GP**

ALWAYS include your Membership Number with any correspondence. This is not just to be awkward - now the Club is large it can be very time-consuming searching the database for a member's number. Your number is printed on the address label of each issue of **Z88 EPROM**. Please be sure to enclose a stamped-addressed envelope with anything needing a reply.

Editorial

The more alert among you may have noticed that this issue bears a November cover date, but in fact has reached you in (hopefully) mid-December. No, this is not another example of the good old Post Office taking Eons to deliver mail yet again: I have to admit that the delay is wholly my fault. In the true traditions of **Z88 EPROM** we are running late again! To tell you the truth, the schedule this year doesn't seem to have recovered from my major spell of back trouble in the Spring. Apart from a temporary recovery in September, every issue this year has been late being sent out. If I were not an eternal optimist I think I might let it get me down!

Even though I am an eternal optimist, I am not foolish enough to expect to get another issue to you before Christmas, so now is the time I must personally wish you all a very Merry Christmas, and a Happy and Prosperous New Year.

Once again, in our true Z88 tradition, January, which is one of the two months conspicuous by the absence of an issue of **Z88 EPROM**, will again be adorned with the December 1991 issue. That issue will have within its pages an index for volume 5, together with many other goodies.

Regarding the new Z88 prices, these should really breathe a breath of fresh air into the Z88 market. The reductions on RAM and EPROM prices were particularly welcome, although it is a shame that the price of the 256k EPROM had to rise when CCL took over the product from its manufacturers EFS. Undoubtedly now is the time to treat yourself to that 512k or even 1M RAM card, just the right size for the Christmas Stocking!

Since my appeal a couple of issues ago, I have received a number of interesting articles, but the flow has once again ceased. I am particularly keen to relaunch the Queries Hints and Tips section as a regular feature, but with more emphasis on the Hints and Tips than the Queries! This is the ideal forum for beginners help, so if you can send in all the little tips that helped you, perhaps these will help those who are just starting out on the road to Z88-land. Also please, please, please keep those articles coming in - why not use some of that spare time over the Christmas break to pen an article for your fellow Z88 users?

Helpline

If you have a technical query, write to one of our Helpliners listed below. Please note that you should include a stamped addressed envelope or sufficient return postage for your reply.

CLI Files - Contact Michael Hey by post only at: 18 Woodside Road, Sandiacre, Nottingham. NG10 5GP

Z88 to Amstrad PCW Link - Please write in the first instance to: Mr A West, 16 Southway, Burgess Hill, Sussex. RH15 9ST.

zBASE, CLI and all Wordmongers products except TX and Comms software - Contact Jason Crook (ex of wordmongers) at TPR, J.S.A. Crook, 4TP B SQN, The Royal Hussars (PWO), Swinton Barracks, BFPO 17. I will also write to order in zBASE.

zBASE - Help on commands and programming. I can accept info/programs on paper, EPROM, zTape cassettes or IBM disk. Contact Robin Jarvis, 27 Gloucester Road, Waterlooville, Hants. PO7 7BJ.

Z88 to Amstrad CPC Link - Contact Duncan W. Kennedy at 32 Otterston Grove, Dalgety Bay, Fife. KY11 5PA.

BASIC Programming - Contact Richard Russell at 59 Campbell Road, Gravesend, Kent. DA11 0JZ.

Interfacing Z88 to various hardware - Mac, BBC, PADs, also UNIX and C experience - Contact J.P. Knight Email JANET on jpknight@uk.ac.lut.sun, or snail mail during term time to Room 66, Hazlerigg-Rutland Hall, Loughborough University of Technology, Ashby Road, Loughborough, Leics, LE11 3TZ.

Z88-PCW Link - Using C-Port program. Please contact David Prestage at 47 Knighton Road, Otford, Sevenoaks, Kent. TN14 5LD.

Anything Educational - Please contact Bob Shore, 8 Anchor Close, Hathern, Leics. LE12 5HP. Telephone 0509 842670.

Machine-code Programming - Please contact Richard Smith, 29 Sandhouse Crescent, Scunthorpe, South Humberside, DN16 1JF.

Printer Setups - Please contact David Stewart at 44 Margetts, Hemingford Grey, Huntingdon, Cambs. PE18 9EP. If you have any queries concerning general printer problems, eg. correct use of cables, how to connect up the printer, printer code language,

understanding the information in the printer handbook, etc. please write to David. Notes on Printing, covering the above topics, are available by post from David. Price £3.00 for 30 A4 pages of detailed advice.

File Transfers - Free file transfers to/from most formats (excluding Amiga). 10 files max. and must be Z88 related - no commercial programs copied. Send disk and pre-formatted copy media, with Club Membership and return p&p to: Phasor Video, Elcot Lane, Marlborough, Wilts, SN8 2AZ. Tel: 0672 514451 (2.00-5.00pm Mon-Fri)

Members Letters

Euan Petrie (2014)
326 West Princes Street
Glasgow
G4 9HA
041 334 1209

Dear Roy,

Your threat to await letters and articles from members before issuing another club mag. has finally driven me to the keyboard, so I hope some of this material is of use to you.

I met CCL in Glasgow at the All Format Show, they came across as very enthusiastic about the machine and its future. A number of points did come up, its definitely yes to a new model, however maybe not as radical as I feel it could be, but then anything will be better than selling a basic machine with about 17k free Ram in todays market.

One useful hint from a member of their technical team. If you are using an external supply, batteries or mains, and plagued as I have been with soft resets when you plugged it in to your Z88. This may be due to static, the cure being to hold the coax plug in one hand and to bridge the live end with your thumb while holding the Z88 in the other hand, then plug the supply in. This equalizes the potential in the two components and certainly seems to have cured my problems.

The drop in Ram prices has most certainly changed my Z88, the club internal 128K was the first recent upgrade and one that I'd recommend to any member contemplating it. Before, though I had 128k in Ram 1, some of the club programs on BBC discs wouldn't load into the filer, as they loaded into Ram 0 or Ram - and no matter how I set the machine the dreaded 'no room' message kept appearing. The extra internal ram solved that problem and now the drop in prices have made the 512K Ram pack too tempting to miss.

Though the new prices should help make the Z88 more acceptable, added Ram and Eproms are still well above the going rates for other machines, average prices for Ram upgrade for a PC seems to be about £65 for 1 meg and £95 for 2 meg. Therefore we've still got some way to go to be competitive in prices.

Batteries, one member Carl Littlejohns (4.10.6) mentioned that his machine appeared to use batteries faster as the machine became older. I also experienced this effect but on measuring the batteries when the low Battery logo appeared. I discovered that the charge appeared to be healthy at 5.4 volts and what appears to be happening is that the Warning Signal is being triggered at a different, slightly higher setting. Not that the machine was gobbling up batteries or using more power. Interestingly after sending the machine for the club internal ram increase, I had to perform a hard restart to kick it off, and then, presto the low battery warning was back to normal.

This brings me to battery types. If like me, you are always on the look out for a cheap reasonable supply of batteries, one supply which is reliable, often gives special price offers and a good life span, is the Boots Alkaline type. However the Jessops (photoshops) brand, while cheap, I've found to be fairly unreliable, they seem to have a shorter life span and batteries in a batch can fail at different rates.

Erasing Eproms:- Being a cheapskate Scot, and not prepared to buy an eprom eraser, or even to subscribe to the club library erasure scheme, also finding that natural UV light in a Scottish winter being mainly noted for its absence, I therefore resorted to the Wives (Scotsmen never acknowledge ownership of such implements) sun-ray lamp, setting the eprom 50 cm away from it, protected by a perspex heat shield, leaving the room for 30 minutes and a few fortifying malts. (in case of the demise of the eprom).

I returned later, switched off and checked. To find a totally erased eprom, proof being, that this message is contained in said eprom.

I'm no programmer rather more of an end user, yet I feel there are areas where the Z88 would have great use. It would be ideal with a genealogy programme, the BBC has 'Kinship', most computer types have at least one. Yet the Z88, while being one of the few machines ideally suited for this type of research lacks one. eg Adding or researching information in libraries or churches without disturbing others. Try using a machine with the dreaded key click or a disk drive. Also it could, using [[jimp/exp have direct access to other machines data. Part of the problem with the Z88's lack of success is I feel its software, or to be more accurate the dearth of software. The really successful machines other than the PC have been linked to software which filled a need or created a market. Apple II with Visicalc/Supercalc. Commodore Pet re Tasword and games, BBC using Education, PCW re Locoscript, Applemac with DTP, but many a good machine has ended up also ran because of lack of support.

Some more adventure games, plus some on the lines of 'Tetris' or 'Repton' wouldn't do the machine any harm. I do realize that the machine has a small user base, therefore programmers wouldn't see any real return for their efforts, other than their names in pixels. However many successful programs run on BBC basic, they've been paid for, made their money, and are now being sold for a few pounds each. So what's wrong with rejigging suitable ones for the Z88?

I like the idea of recharging ordinary batteries (5.7.13.), it'll save money and is probably ecologically sound, and I would be interested, how about issuing it as a kit? I am sure a fair number of the members feel happy constructing a circuit, but find difficulty getting suitable components. I feel braver questioning our technical wizards after the slight problem with the cables. Like Father Ryan (5.4.8.) I made up the cable to order, but when it didn't work put it down to either my own incompetence or a faulty machine, rather than quizzing the instructions. So what I'd really like for the battery recharger is a components kit with numbers and full specifications. I hope someone was nice to Father Ryan and sent him an eprom or two after all his problems, the type of operation that he is involved in the missionary field could be worth an article or two for **Z88 Eprom**.

Reaching the end Roy, hope that your back hasn't developed the way you feared, and that the club workshop was a success. My own small attempt in asking if Glasgow area members were interested in a local self-help group via the Mag, was a complete failure. Not one reply which is a pity, as possibly a healthy local group could have built up links with CCL. However obviously that was not to be. All the best with the Mag, and thanks for all the hard work, I'll finish on a wee question. I know that you are a Sir Clive buff, could you give me the titles of some reasonable books on him?

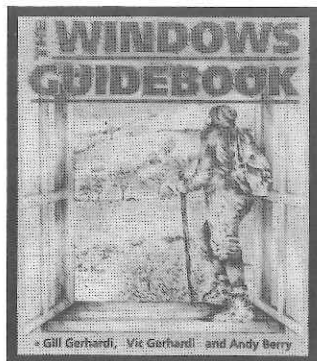
(Some interesting points. Yes, my back is holding out at the moment, and yes, the Workshop was, all things considered, a resounding success. That is not to say that the format can't be tweaked just a little here and there to improve things further. I hope to have finalised the date for the next Workshop in time for the next issue. Regarding batteries, I too have used Boots brand alkalines, and found them ok. My usual brand is Sainsburys, available from both their supermarkets and DIY stores. They don't last as long as Duracells, but are considerably cheaper! Regarding your last point about books on Clive Sinclair, leave it with me. I have one title, published in about 1985, but it eludes me at the moment so I cannot give full details. I am pretty sure, however, that it is long out of print. - Roy)

Keith Reader (4853)
CHORLEY
Lancs

Dear Sir,

I have been a long time user of Sir Clive Sinclair's computers starting with the ZX81 then the Spectrum and I now use a QL. It has taken some time to acquire a Z88 but as I have found out it is another little gem from Sir Clive.

My employers supplied me with a PC portable computer but I rapidly found out that it was not very useful as without a mains supply it soon ran the batteries down.

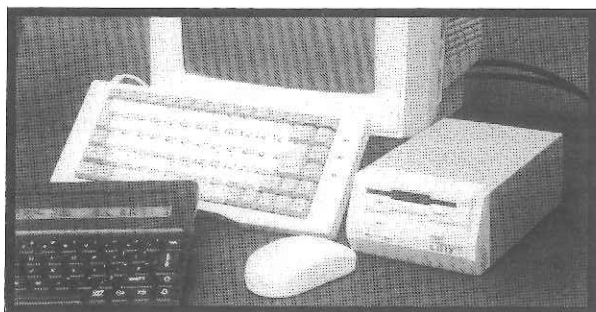


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PipeDream
Breaking down the barriers

When I purchased my Z88 it had to meet several criteria to be accepted as a success. I have no desire to carry a computer around just for the "posing value".

The main parameters were:

1. Allow full exchange of files between the Z88 and the QL so that I could use it at home.
2. Allow full exchange of files between the Z88 and the PC at work and most importantly be able to import PipeDream files into a PC word processor and vice versa.
3. Be able to satisfactorily use the diary instead of the normal book version.
4. To avoid excessive costs I must be able to run the machine on re-chargable batteries.

I satisfied the first requirement by obtaining from the QL User group, of which I am a member, a free copy of their Z88 to PC link program. This worked satisfactorily with no problems and it enabled me to back up files on a 3.5" disk in case of power failures on the Z88.

To link with the PC I purchased PC-Link II for £35. I had no problems getting the system to run but I have been disappointed with the lack of features. With the QL link I could print out a document straight from the Z88 through the QL to my printer. This option is not possible with the PC link so in order to make the computer meet my requirements the ability to import PipeDream files into a PC word processor became imperative. A further disappointment with PC link was it's apparent lack of being able to transfer ASCII files.

Meeting the second requirement was again easy with the QL although the print through feature previously mentioned was sufficient to enable hard copy to be produced straight from the Z88. I solved the problem on the PC by using the Psion Quill word processor that I am familiar with on the QL. This has the facility to import files and only minor deletions are required to obtain a satisfactory text. An ASCII print to disk from Quill transfers into the Z88 with no problems provided that the left hand margin is reduced to zero before commencing.

The Diary has proved very satisfactory and the paper version has been discarded. The HiTEK external Ni-Cad battery holder with rechargeable batteries has satisfied the final requirement.

I must say that the Z88 has far exceeded my expectations and has become a constant companion.

Should anyone have any comments on linking a Z88 with a QL I would be pleased to hear them. I am also interested in exchanging data between Archive on the QL and PipeDream.

Mick Collins (4399)
Elstead
Surrey.

Dear Roy,

Thanks for the upgraded circuit board - I'm happy to say, that after a 60 hour soak test, it is still working perfectly, and, together with a 128k RAM pack, turns the Z88 into a near ideal home computer. The permanent applications, addresses, diary and notebook now live in RAM.0, and are permanently suspended for immediate access. Ephemeral matters like letters, articles and the odd jottings are all in the default RAM.1/TEXT directory, and when not suspended can be accessed with a single word filename, whilst RAM.1/ODDS holds other files and BASIC progs together with /RECIPES and /CELLAR.

I was most interested in the article by Jack Lawrie. During the War many cinema managers used to recharge their usherettes' torch batteries. These were never allowed to discharge too far but were recharged nightly at a low rate. It was claimed that with fresh cells a six-fold increase in life could be expected.

I think it was a letter published in Wireless World at that time that recommended PCR for "re-depositing the zinc more evenly" and I used the one good section of a scrapped bridge rectifier to build a charger for my bike lamp batteries. The secret of success was to recharge while the zinc was still sound and one would attempt to judge the thickness of metal remaining by squeezing the cells! After a few months they would fail due to high internal resistance caused by drying out - perforating the cell bottoms and standing them in a saucer of water never worked for me.

The question of charging time is very interesting, and noting that Jack's charger approaches "constant current" conditions, I wonder if a modern digital meter would show a rapid voltage rise as the cells approached full charge? This is a method used to check sealed lead-acid cells and my own lantern battery charger is "constant voltage" to battery makers figures.

Incidentally, why "alkaline"? Surely the sal-ammoniac used in the old carbon-zinc cells is an alkali?

(Yes, Mick, it is an alkali, but the batteries recommended for use in the Z88 are Manganese Alkaline cells, and this is commonly shortened to just "alkaline batteries" - Roy)

Queries, Hints & Tips

Problems with 256k EPROMS

- Michael Hey (0703)

Here are more problems for users of 256k EPROMs! Two issues ago Vic Gerhardi wrote about a few (see "The Numbers don't Add Up" - 5.7.22).

EP_fetch (available from the Application Library, or on Ranger World/Ranger Universe) struggles with 256k EPROMs, due to a bug. I had problems (namely "Bad Program" errors) with BASIC programs stored on mine.

After the initial panic had passed I tried again using the <>EF command in the Filer, and I am pleased to report that the files on the EPROM are o.k. (pew!).

The Filer has a bug of its own. It cannot retrieve files with one or two character names (like Z or C or EF), so if you save BASIC programs with short names (like I do) then you are up a gum tree.

Printing From BASIC

- Jack Lawrie (4635)

I don't know about other members but I have had problems in trying to get a print-out from a Basic program. While studying the listing of Paul Stevens "UDG-MAGIC" program (Software Library Z091) to see if I could pick up any tips, I found that the PRINT# section of "Z88 Portable Computing" began to make sense.

For those who may be interested, list the following program -

```
100 CLS:PRT=OPENOUT'' :PRT'' :LF$=CHR$(10)
110 PON$=CHR$(5)+' ' [' ':POFF$=CHR$(5)+' ' ]''
120 :
130 A$=' ' FOR '' :B=2
140 :
200 PRINT#PRT,PON$
210 PRINT#PRT,' 'TEA ''+A$+STR$(B)+LF$
220 PRINT#PRT,STR$(B)+' ' ''+A$+' 'TEA''+LF$
230 :
300 PRINT#PRT,POFF$
310 CLS:END
```

100 and 110 simplify program entries.

200 switches on the printer

210 and 220 show the form that entries must take. LF\$ gives a Line Feed.

300 switches the printer off.

(I could not find a use for CLOSE# - supposed to close the printer file but whenever and wherever I tried to use it I ran into trouble)

You may wish to add the following -

```
150 PRINTTAB(X,Y)''Printout Y/N'';:INPUT PR$
160 IF PR$<>' 'Y'' THEN CLS:END
170 IF PR$=' 'Y'' AND GET(&E5) AND 1 THEN 200
180 PRINTTAB(X,Y)''PRINTER NOT READY''
190 G$=GET$:GOTO 150
```

- giving a choice of print or not, and ensuring that the printer is ready.

Club Workshop Report

Robert H. Jose (4578)

Dear Roy,

Thank you for a most enjoyable Workshop Day. I appreciated having my Z88 upgraded to 128k, and I believe the machine is now working more quickly as a result of the additional memory.

I congratulate you on the improvements in the format of the Workshop. The timetabling was perfect - as it gave us the chance to hit most of the Workshop Groups we wanted to attend. In addition, the PrinterEd hands-on group is a fine example of the way to plan for future workshops - actually using the Z88 to solve a particular problem. One suggestion I have for a Workshop topic is advice on using the Club Library software - this could also incorporate new beginners.

I did enjoy the day, although I found the CCL people as unhelpful as ever. I think it a shame that we can't get better support from Cambridge, and that their representatives are either unable or unwilling to answer our questions.

The Workshop Day seemed to be generally very well received. Attendance was around the 120 mark, which made the venue just about adequate size-wise. Unfortunately the same cannot be said for a couple of the rooms housing the Workshop Groups, which seemed to overflowing into the corridor on occasion! Next time I shall endeavour to get even bigger rooms for our use.

Many of you filled in the Questionnaire which was part of the information pack given to you on entry, and mostly the feedback was very positive, with the exception of the room size problem mentioned above. From the Questionnaires received, it appears that the most popular workshop group was "Z88 Applications and OZ", closely followed by the PrinterEd group.

My thanks to all members who took the time and trouble to attend - I trust the effort was more than worthwhile. Also thanks to the army of helpers without whom it would not be possible - the Group leaders, my family, and anyone else I've forgotten! - Roy.



Vic Gerhardi (the bearded one in front of the whiteboard!) leading the way during the Z88 File Transfer Workshop Group. This group is always popular, since most Z88 users transfer to one machine or another, and most have problems!



Ian Braby, our hard-working Software Librarian, offering help, advice and programs on the Day, ably assisted by Michael Hey, George Ogden and Bob Aldridge.

Thanks as always to Freddie O'Hare for the photos.



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IMPORTANT NOTES: This upgrade involves opening the machine and working on the circuit board. This work will invalidate any manufacturer's warranty still on the Z88, so unless you accept this do not send the machine for upgrading. Do not send your Z88 if it has any sort of fault - all machines will be tested before upgrading, and if any fault is found the machine will be returned immediately with a refund less £5.00 to cover postage costs.

The 128k RAM in slot 0 is fully available to PipeDream and the Filer. The upgraded machine **does not** behave like an Expanded Machine as defined in the Z88 Developers Notes (ie. one with min.128k in slot 1). You do not get the 40k BASIC etc. unless you also have min.128k in slot 1. See Developers Notes for more details on Expanded Machine.

**Z88 Users' Club, 68 Wellington Street,
Long Eaton, Nottingham. NG10 4NG.**

A Letter From Comdex

by David Viewing

Las Vegas, Nevada, 24 October 1991

They call this the 'High Desert'. The highways cross interminable desert basins, each one large enough to hold an English county, separated by high mountain ridges that stretch from horizon to horizon. In the mountains, the highway weaves and turns, so that one can see forward no further than the next bend. But sometimes, at the crest of a mountain ridge, the highway can be seen leading straight ahead across the valley floor beyond.

In the perfectly clear air of this country, such a view is breathtaking. The distant mountains may be 30, or even 50, miles away with the black ribbon of the highway reaching out to them, straight as an arrow across the empty valley floor. Such forward visibility is commonplace in this magnificent desert, but in the world of computers, it is a rare thing indeed.

However, a view such as this may have been afforded by COMDEX Fall '91. The largest computer show on Earth, COMDEX presented images of new and evolving technologies that will certainly shape the future.

Convergence at last

What has really become clear this year is that several disparate computer technologies have finally evolved to a point where they can at last be combined to form what will prove to be an entirely new computer concept : what I call the 'lifetime computer'.

So what are these evolving technologies ? Crucially, they are the Graphical User Interface (or GUI), and a generation of fantastic new miniature hard disks. While these are the engines of the future, the fuel is provided by increasingly low power electronics (watch out for a new era of 3v, rather than 5v, chip sets) and ingenious solutions to old problems, like the new pen input pointing devices.

In combination, these technologies offer at last a truly practical personal computer - small enough to be taken anywhere, industry standard software, an intuitive user interface that can be used by anyone, and, critical in my view, enough storage to hold everything the user ever does. Such a computer might be useful enough to remain with its owner throughout his life - hence 'lifetime computer'.

To withstand countless waves of product and technology evolution, such a computer would have to be useful indeed. However, such an idea is not entirely novel. Many industrial products - light bulbs, for instance - have been stable in design and function for 50 years or more. Even our beloved Z88 has lasted 5 years and will certainly reach 10 in the hands of its more dedicated admirers. So the idea of a computer sufficiently fit for its purpose that it will last a lifetime is not out of the question - it is just surprising.

The GUI

The idea of using graphical symbols, or 'icons', to denote objects in a computer rather than calling on a knowledge of arcane computer syntax has made Apple Computer Corp the only serious rival to IBM in the personal computer universe.

When introduced in 1985, the Apple Macintosh was heavily burdened with the graphics and processing power needed for GUI, which requires far more processing power than the heiroglyths of DOS. As a result, the Mac has always sold at a substantial premium over PC's, limiting its application to environments where cost effectiveness was measured less rigorously than in the PC universe. As a consequence, software developers focussed and continue to focus on the PC platform, said to be running at the rate of 300 new programs every day at present. But while Apple was relegated to the halls of academia and to the creative arts, where its technology had unique benefits, the benefits of GUI did not escape the PC industry.

Years of abortive experimentation with inadequate PC hardware and ill-conceived software imitations of the Mac system have eventually led to a practical solution - Microsoft Windows. The importance of Windows is not so much in its intrinsic merit - though it has plenty - as in the fortuitous arrival of PC hardware that at last can support GUI.

At Comdex Fall '91, the definitive PC on every booth was a '386 with 3-4M RAM, VGA and a 40M 23 Msec disk - and at trade price of \$1200 or so, affordable for most users. So it is the power of the PC's, not the development of software, that has paced the introduction of GUI to the PC.

A second, and no less important pacing factor has been the development of Windows application programs. While old fashioned DOS applications can run under Windows, the whole point of the common user interface is lost. This year, all major software vendors were able to show Windows versions of their products. The new windows word processors with their WYSIWYG displays are especially impressive,

Windows applications may not be perfect, but they will certainly open the computer universe to a vast range of ordinary users who see computers only as a tool to do a job, not an end in itself. Windows is much more than an operating environment - it brings a common user interface to a fantastic variety of PC applications. Future computer users will be freed from the travail of learning each application in turn - instead, they will need only to concentrate on the function of the application to be able to benefit from it. Windows is set to become the standard computer interface for many years to come, and is thus a cornerstone of the 'lifetime computer'.

Storage Technology

Not so long ago, technologists were confident that mechanical storage was a transient phase, soon to be eclipsed by solid state technologies. Of course, it never happened. What these 'technologists' failed to understand was that mechanical systems can be miniaturised just like electronic ones, and with all the same benefits. As mechanical systems grow smaller, reducing component masses yield higher speeds, lower powers, better reliability and, of course, lower cost. So it is with an entirely new generation of hard disk drives, providing 100's of Mbytes of data storage in 2.5" and now 1.8" formats. These drives weigh as little as 300g and are faster than most desk-top PC drives, as well !

These new drives outclass solid state 'credit card' memory by one or even two orders of magnitude in terms of storage capacity and cost. They can even be made exchangeable - just like PCMCIA cards.

Such low-cost, high-performance storage offers at last the holy grail of personal computing - the ability to keep forever everything that you do - to never have to delete a file !

A good typing rate for a typical Z88 user might be, on average, 2K per day. An author, typing at 70 wpm, might get to 25k per day in bursts. Even at this rate, the data volume only amounts to 9M per year. at Comdex '91, several vendors showed tiny 2.5" hard disk drives with 60, 80 and even 120M Byte capacity - literally enough for a lifetime's work - without ever having to delete a file !

Once again, it is hardware technology, not software, that paces computer innovation. The miniature hard disks still have some way to go if lifetime data is to include visual images as well, while processing speed becomes vital if the user is not to die of boredom waiting for the computer to find his data. However, the practical lifetime computer is at the horizon at last, and will become reality in 1992.

It is my contention that some of these machines will perform so well, and last so long, that they will pass into old age along with their owners.

Footnote

The 'Lifetime Computer', a hobby horse of mine for many years, normally evokes scepticism in those who will allow me to expound it. However, it is a concept whose day is soon to dawn. Actually, Z88 still comes closer to my concept than any other machine actually available today or on display at Comdex '91. Small and light enough to take anywhere, powerful enough to run powerful applications, Z88 might actually qualify for the title 'lifetime computer' if it were not hobbled by incomplete design and disappointing reliability.

(David Viewing is now the Managing Director of Ranger Computers, and has been a key figure in the development of handheld computers.)

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Z88 Keyboard Repairs

By Julian Beach (2511)

The keyboard on my Z88 recently started to show its age, when certain keys became very difficult to operate. Since I could not afford to replace the keyboard, I decided to attempt some DIY repairs: A keyboard without a left cursor key or a P,M,X,S,W is not very useful!

The dismantling of the Z88 to expose the keyboard is easy, once all the screws have been found (one under the Serial number sticker, and one under each of the two square rubber feet). Since the operations on the keyboard require the application of a voltage to test the continuity of the tracks, I also unplugged the two keyboard contact strips from the circuit board sockets.

Once free of the circuit board, the keyboard can be handled easily. The first task is to expose the contact sheet which is between the rubber keyboard mat and the black plastic backing. All this is held together with the lip of the keyboard mat and three rubber extrusions from the keyboard mat, sort of rubber rivets. Once exposed I discovered that all the faulty keys were linked by one line of the circuit board, and from here it was a simple task to locate the break in the track with a multimeter measuring resistance. In my case there was not a break - the problem was due to a section of track that had worn very thin, and across which resistance was high.

The damaged section of track was repaired with some electrically conductive paint (try car spare shops or Tandy). Practice painting the very thin lines necessary first on paper - the paint, I discovered the hard way, removes the existing circuit tracks if you try to wipe off mistakes! Small excesses of paint can be removed by scraping with a needle or similar when it is dry. Once the paint is dry, the circuit can be checked (it does not seem to conduct when wet), and touched up as necessary. It is also advisable to check for short circuits - there should normally be NO connection between any of the tracks on the circuit board.

Re-assembly is quite easy, although the rubber 'rivets' can be quite difficult to pull through. Plugging in the keyboard contacts can be tricky, but it is important to avoid bending the strips too much. When putting the case back together ensure that the battery contacts are properly located.

WARNING!! Do not attempt to clean the tracks of the contact sheet with abrasives or solvent - they are VERY easy to damage, and solvent may clean the tracks right down to the bare plastic!!

My Z88 keyboard (upon which this is written) is now working perfectly, despite my having to repair several additional tracks damaged by doing what I have warned you not to do! Only time will tell how long the repairs will be effective, but the DIY approach is certainly worthwhile in emergencies, or when CCL have no spares!

(PLEASE NOTE: The Club cannot be held responsible for any damage you may do to your Z88 while carrying out keyboard repairs! - Roy)

Z88 Miscellany

- M.Foweraker (4423)

Following several recent articles I offer the following observations and tips which I hope are accurate! Also a query or two.

Mains adaptor - reverse polarity!

After problems, see below, I was put in contact with EFS Ltd who stated that there is a diode which is put in circuit when the adaptor is inserted. This protects the Z88 against reverse voltages, but as diodes are not perfect they cause some voltage drop in the correct direction!

If your batteries are getting old and your diode has a high threshold, then you will get BAT LOW when you plug in. On my machine this event occurs after about 3 weeks and BAT LOW in use on batteries after about 5 weeks.

Static - my problem!

I used to (for about 2 weeks) plug in the mains adaptor with the Z88 sleeping until I found that it would not wake up! I now plug in with it awake.

Sometimes there will be blue lines and even a squeak (the comms port and the parallel adaptor can also be sources of static). With the Z88 awake it seems more tolerant of this jolt. As our office suffers from static I have observed that although 90% of the time there is no effect the other 10% can cause loss of memory availability (NO ROOM), soft reset or other oddities. To minimise this effect I usually try to earth the various connectors to the keyboard (conductive rubber) before inserting. This seems to reduce the problem.

HARD or SOFT RESET in use.

I have only had one of each of these and I believe that they were due to an EXecuting ALARM interrupting a PipeDream recalculation.

Aliases - What a good idea!

Another type? An extension of the concept for those who use a lot of CLIs. Have a PipeDream called CLI which is set via Filer to the appropriate directory and then all you have to do is enter CLI #F|EXcli.

Reset the INDEX page. (5.6.21)

Also from PCW I offer the following sequence which forces the Z88 to straighten up. #I|CARD#V`S`E which I file as rsi "REsetIndex" Hence a CLI to do EPROM CHECK called by #F|EXec reads "D`D`ECHAIN":RAM.1/LIBRARY/ECAT""E When I know the bytes used/free I can then KILL the BASIC prog.

LIST files - a use of!

I have two list files tools.l and beams.l which refer to a set of small spreadsheets (only one page big, no scrolling, quick calculating). These save memory and INDEX lines and can be easily swapped.

This is obviously not as extensive as William Sutherland's use, but illustrates list files have a greater use than the manual suggests.

Z88's Golden Virtue!

As a user of several other machines the Z88's ability to remember where you are in several documents and start up in less than a second, (no:-Boot; Autoexec; Load Application; Load File; Find Place in Doc of other machines) sets it head and shoulders above most other architectures. I can usefully use the Z88 on a 15min train journey, or even in the 2mins while waiting on the platform! Only the Psion MC machines are rivals, but cost much more!

Z88 PC Support Utilities (PCSU) comms problems!

HELP!! Although I have PCLINK II I would like to dispense with its services and use PCSU . However although my homemade lead works with PCLINK software and the other LIBRARY progs., it needs Z88 pins 4 and 5 linked to work with PCSU. However then data is lost as there is no flow control! PC is an Apricot XEN-S Z88 has XOFF/XON. Any suggestions?

128K :RAM.0

How long will I be without my Z88:(? Is it "not feasible" for it to be "user installed"? IF YOU CAN DO A 128K Z88 FOR £45 IN PARTS WHY ON ZARG [CCL are obviously not on earth:)] CANT CCL:O. What about 256K:)?

Alkaline Recharger: (As ASDA no longer seem to do their 8 alkalines for £3.49!), can I be put on the waiting list?

(I usually try and turn the 128k upgrade around in a couple of days, so you should be without your machine for little more than a week including postal times. It is not feasible for it to be user-installed because it involves de-soldering the 32k RAM chip original to the board, preferably without damaging the board! I can assure you that this is not a task for the faint hearted, and it does require special tools. 128k would appear to be the practical limit at the moment - there is no 256k chip, and while I have enquired about a 512k chip (which would need an extra address line not presently on the socket) these are currently costing over £100 each just for the chip! - Roy)

Library Update

This month sees a few updated programs, a few additions and the birth of a new area; the ShareWare List, as heralded in the review of Sterling pfs.

This will be the last update to appear before the publication of the next edition of the Library List, which will be in January 1992. It will remain at £1 (plus postage and packing - please don't forget that!), despite all the recent additions, but it is likely to rise with the March edition.

The Updates

Programs which have been updated include:

- Z105 INVENTORY v2B; John Davies has ironed out a couple of bugs which had been discovered. Now 23K
- Z140 ANTS by Jack Lawrie; now 2K
- Z150 EDITOR by Jack Lawrie; still 4K

The New Programs

Z161-162 Two from Mr.M.Foweraker (4423)

- Z161 TABLES.BAS; for testing multiplication tables, using both multiplication and division. 2K
- Z162 HIGHWAY ENGINEERS SUITE; a suite of PipeDream spreadsheets and link file, complete with documentation. 7.5K

-oOo-

- Z163 EPMGR by Richard Boam (2891); an EPROM manager which, not only allows file selection, but for CHaining of files from EPROM. 15.5K
 - A=documentation
 - B=BASIC loader
 - C=machine code

- Z164 NEXT, PLEASE... by Michael Hey (0703). Resets the BASIC cursor and avoids the use of quote marks in loading new programs. Published in Z88 EPROM Vol.5 No.7. 3K
- Z165 APR.BAS by Jack Lawrie (4635). Calculates the Annual Percentage Rate of any loans, taking into consideration all fees, etc. 7.5K
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Shareware Files

The following programs are all "SHAREWARE", which is to say that the authors expect to receive a payment from you, should you decide to keep and use their software. In return you will receive an enhancement and/or a printed manual, together with upgrades in the future. Monies should only be sent to the authors. Full details will be found in the program's documentation.

- ZS01 Z88-WORDPERFECT LINK (v1.08) by Tinus van de Wouw (2267). A Z88-PC link package which doesn't require the PCLink ROM and offers, in addition, file conversion to WordPerfect. Only available on PC disk.
- ZS02 STERLING pfs by David Humphries (3781). An excellent personal finance system with which to keeps tabs on your solvency (or otherwise!). 32K
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NEXT ISSUE OUT MID JANUARY

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